REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
	Viewgraphs	

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Telemetry Networks	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)	5d. PROJECT NUMBER
Sid Jones	5e. TASK NUMBER
	5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)	8. PERFORMING ORGANIZATION REPORT NUMBER
Naval Air Warfare Center Aircraft Division 22347 Cedar Point Road, Unit #6 Patuxent River, Maryland 20670-1161	

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

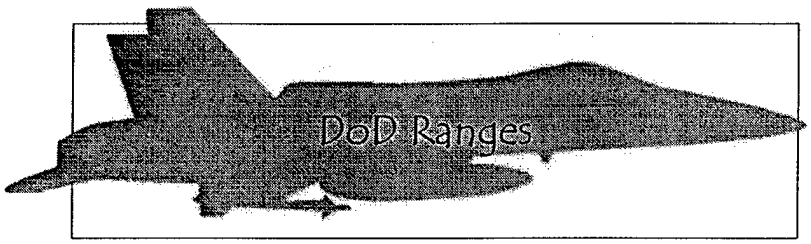
14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Sid Jones
					19b. TELEPHONE NUMBER (include area code)
Unclassified	Unclassified	Unclassified	SAR	7	(301) 342-1601

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39-18

Telemetry Networks



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Data Acquisition Networks T&E Need

- Meet ever increasing data acquisition requirements
  - Driven by complex weapons platforms
  - Faster avionics
  - Increased simulation and modeling
- Timely insertion of leading edge technology
- Future data acquisition systems must be network oriented
- Leverage Telecommunications investment
  - Standards; Hardware; Software

Network Centric Testing

- For many reasons, we are being driven towards commercial network technology
  - Diminishing test funds
  - Diminishing spectral resources
  - Geographically disperse test facilities and assets
    - » Joint test exercises
  - Increased modeling and simulation
    - » including Hardware in the Loop
- Judicious choices of network architectures and protocols makes this work
- Test Networks are required

Traditional Systems

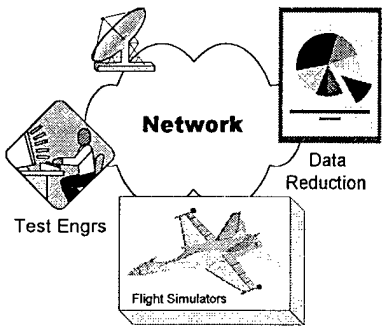
- Operates via standards unique to the instrumentation community (IRIG 106)
  - Does not leverage COTS vast Telecom market
  - Leading edge technology slow to be introduced
- Architectures are based on 20 year old technology
- Does not meet the "network compatibility requirement

On-Board Data Acquisition Networks

- Easily interface with the global network infrastructure
  - World Wide Web, Local networks, etc.
- Are ***Very Fast and getting faster!***
  - 10 Gigabit FC and Ethernet
- Have an open architecture based on commercial standards
  - Easily incorporate leading edge/legacy technology
    - » e.g. AF302 SBIR, CAIS to Fibre Channel bridge

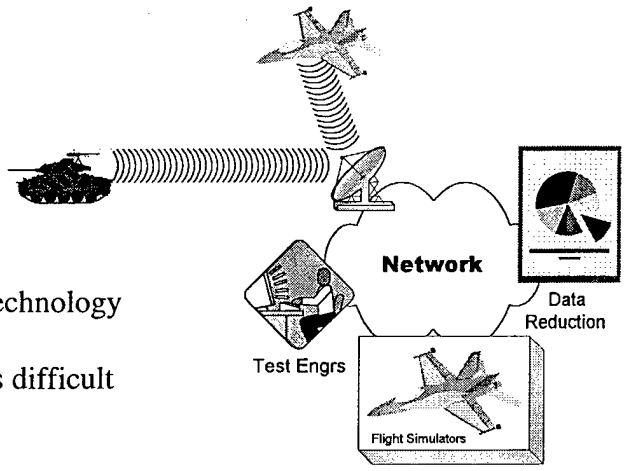
Ground-Based Networks

- Many standards groups addressing requirements.
- Traditional network arena



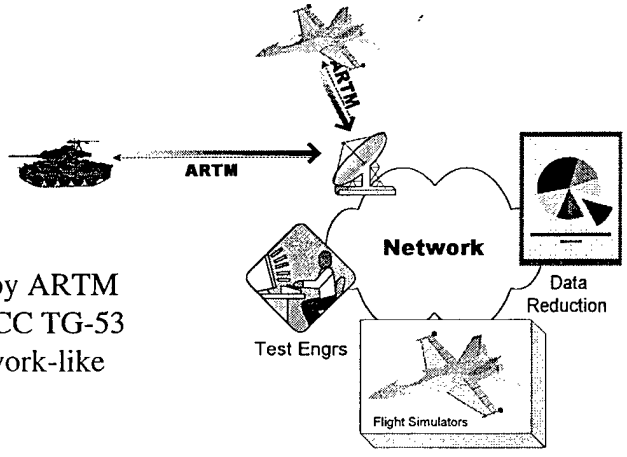
Traditional Systems

- Based on older technology
- Uni-directional
- Adaptive formats difficult

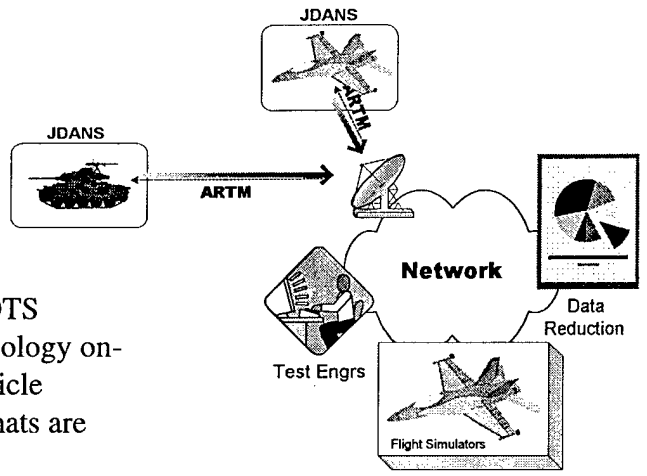


Packetized Telemetry

- Being worked by ARTM program and RCC TG-53
- Will allow network-like connectivity

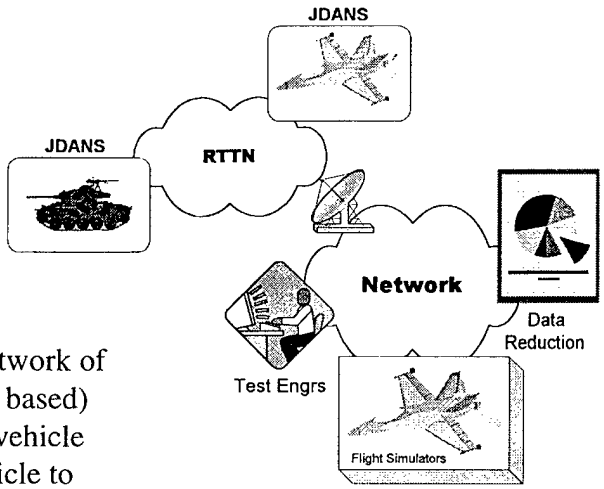


Data Acquisition Networks



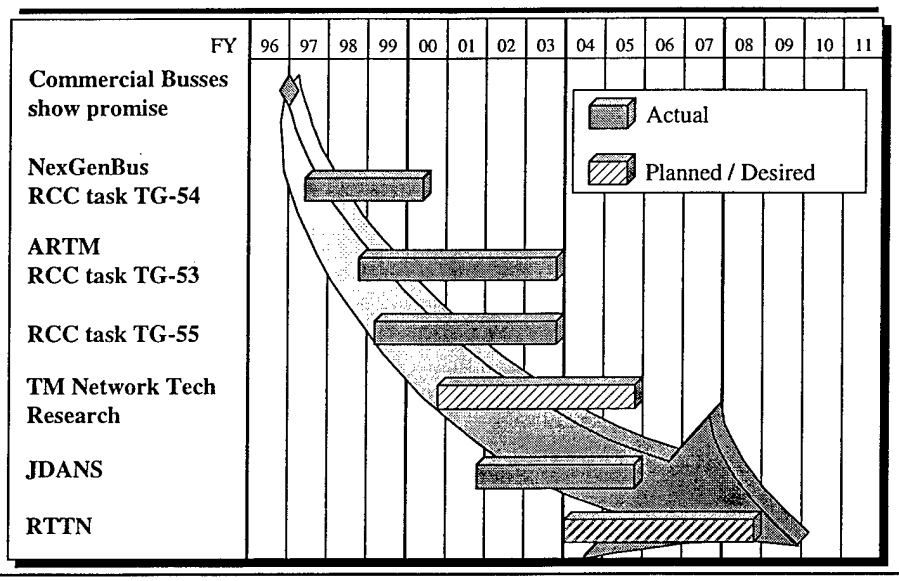
- Leverages COTS network technology on-board test vehicle
- Adaptive formats are second-nature

Telemetry Networks



- Treats entire data acquisition as a network of networks (Internet based)
- Enables seamless vehicle to vehicle and vehicle to ground connectivity

An Integrated Path to T&E Networks



Other DoD Efforts

• CENTS	OSD/Air Force	Current
• CAIS / FC Bridge	Navy/AF	Current
• Smart Sensors	OSD/Air Force	Proposed
• 2-RAD	OSD/Army	Current
• VISION	Army	Current
• ARTM	OSD/Air Force	Current
– On-board data management		
• Wireless Network	Navy	Complete
• FI 2010	OSD/Army	Current

"Close Encounters" Analogy

- Networks are not a new concept
  - Independently, for different reasons, through different processes
    - » Many groups have identified networks as the future solution
- We are now trying to address these efforts
  - Identify common requirements
  - Consolidate common or overlapping tasks

SUMMARY

- Very definite and critical need
- Data Acquisition Networks/Telemetry Networks
  - The missing link to Network-Centric Testing
  - Leverages COTS capabilities and products for T&E
- JDANS/RTTN
  - Broad Tri-service and industry support
  - Focuses on commercial interoperability network stds
- If we don't act in a timely fashion …
  - Risk losing momentum
  - Incompatible point solutions will develop